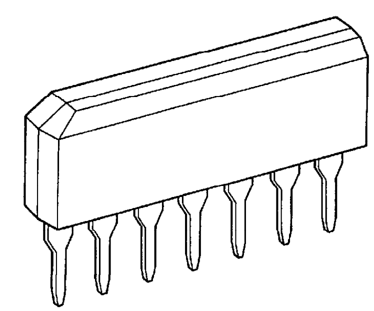
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

TA8710S

SILICON MONOLITHIC

SIF CONVERTER FOR TV AND VTR

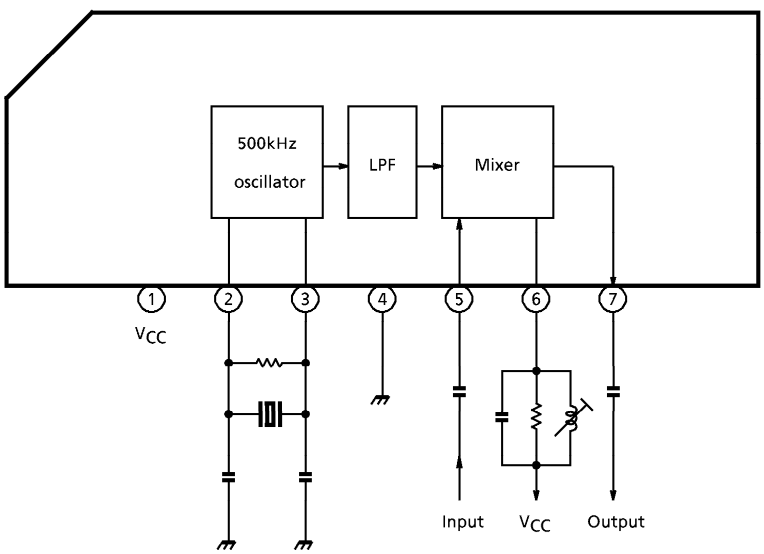
The TA8710S incorporates a 500kHz oscillator and mixer in a 7-pin SIP package, which converts each of the sound carrier, 5.5, 6.0 and 6.5MHz into 6.0MHz.
Since this can process 5.5 and 6.6MHz SIF signals as 6.0MHz signals, the sound signal processing stage of multi standard TV and VTR can be simplified.
The recommended supply voltage range is ±10% for V_{CC} : 9V.



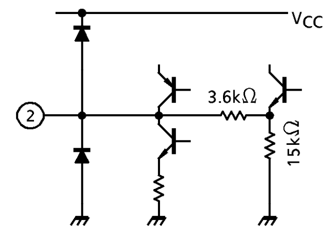
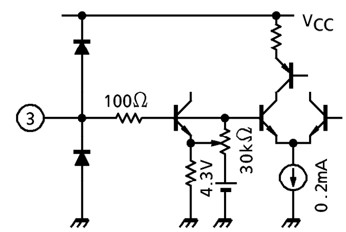
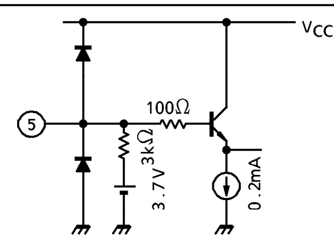
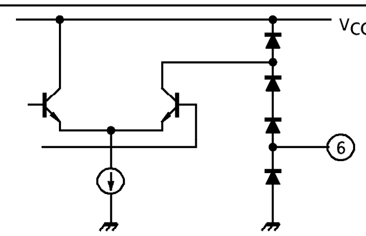
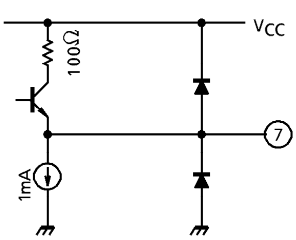
SIP7-P-A

Weight : 0.72g (Typ.)

BLOCK DIAGRAM



TERMINAL FUNCTION

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
1	V_{CC}	$V_{CC} = 9V$ (Typ.)	—
2	500kHz oscillator	Connect a 500kHz Ceramic resonator between this pin and pin 3.	
3	500kHz oscillator	Connect a 500kHz Ceramic resonator between this pin and pin 2.	
4	GND	—	—
5	Mixer input	This is an SIF signal input terminal of 5.5, 6.0 and 6.5MHz signals. This will be mixed with a 500kHz oscillator output and converted to 6.0MHz signal.	
6	6MHz tuning coil	This is a 6.0MHz tuning coil connection terminal for converters.	
7	Mixer output	This will output an SIF signal converted to 6.0MHz by converter.	

MAXIMUM RATINGS ($Ta = 25°C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	15.0	V
Input Pin Voltage	V_{in}	$GND - 0.3 \sim V_{CC} + 0.3$	V
Input Pin Voltage	e_{in}	3.0	V_{p-p}
Power Dissipation	P_D (Note 1)	0.4	W
Operating Temperature	T_{opr}	$-20 \sim 65$	°C
Storage Temperature	T_{stg}	$-55 \sim 150$	°C

(Note 1) When using the device at above $Ta = 25°C$, decrease the power dissipation by 4mW for each increase of 1°C.

(Note 2) Handle with care as this product is weak at surge voltage.

ELECTRICAL CHARACTERISTICS

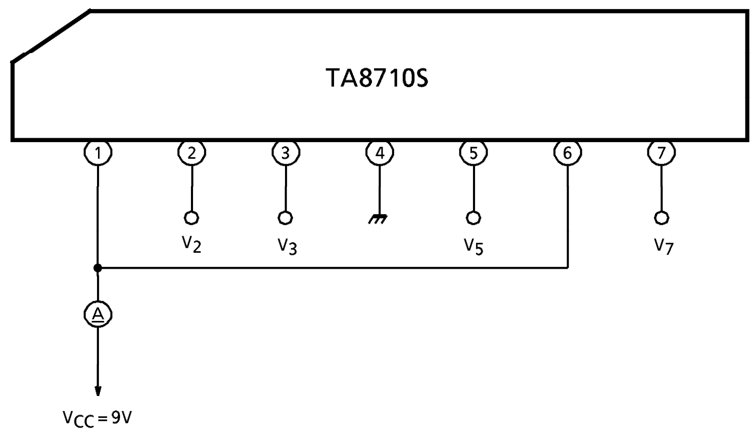
DC CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 9V$, $Ta = 25°C$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	I_{CC}	1	Total current consumption of pins 1 and 6.	5.0	7.1	9.3	mA
Pin Voltage	V_2	1	—	4.0	4.4	4.8	V
	V_3		—	3.9	4.3	4.7	
	V_5		—	3.4	3.7	4.0	
	V_7		—	6.4	6.8	7.3	

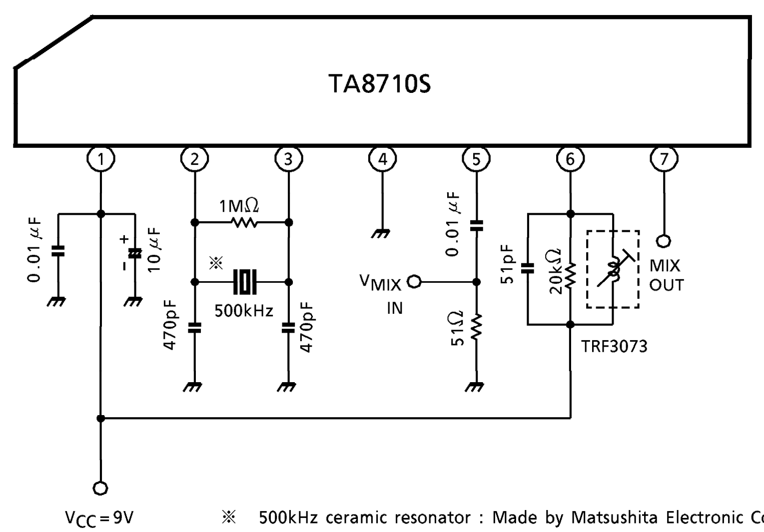
AC CHARACTERISTICS (When using the specified parts, unless otherwise specified, $V_{CC}=9V$, $Ta=25°C$)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
500kHz Oscillation Level		V_{OSC}	2	Measure amplitude of pin 3 oscillation waveform.	0.9	1.2	1.5	V_{p-p}
500kHz Oscillation Total Harmonic Level		I_{OSC}	2	(1) Measure pin 3 by spectrum analyzer. (2) Calculate the difference between 500kHz oscillation level and total harmonic level.	—	40	35	dB
500kHz Oscillation Supply Voltage Drift		Δf_V	2	(1) Measure the frequency drift by using the frequency counter and the buffer amplifier, which is connected with pin 3. (2) Calculate the amount varied when changing V_{CC} from 10~6V.	—	0.002	0.5	kHz / V
500kHz Oscillation Temperature Drift		Δf_θ	2	(1) Measure the frequency drift by using the frequency counter and the buffer amplifier, which is connected with pin 3. (2) Calculate the amount varied when changing temperature from −10~60°C	—	0.023	0.063	kHz / °C
SIF Converter Conversion Ratio	5.5MHz	$G_{m5.5}$	2	(1) V_{MIX} : 36mV_{rms} (2) Measure pin 7 by spectrum analyzer. (3) Calculate the 6.0MHz output gain when each 5.5, 6.0 and 6.5MHz is input.	22	27	32	dB
	6.0MHz	$G_{m6.0}$			24	28	31	
	6.5MHz	$G_{m6.5}$			22	27	32	
MIX Total Harmonic Level		I_m	2	(1) V_{MIX} : 6MHz, 36mV_{rms} (2) Measure pin 7 by spectrum analyzer. (3) Calculate the input level of which the total harmonic level against 6MHz output level.	—	—	40	dB
MIX Input Dynamic Range		V_{im}	2	(1) V_{MIX} : 6MHz (2) Measure pin 7 by spectrum analyser. (3) Calculate the input level of which the total harmonic level against 6MHz output level will be bigger than −40dB.	100	—	—	mV_{p-p}
MIX Input Impedance		$R_{in\ 5}$	2	Measure the MIX input (pin 5) by impedance meter.	2.1	3.0	3.9	kΩ

TEST CIRCUIT 1
DC characteristics



TEST CIRCUIT 2
AC characteristics

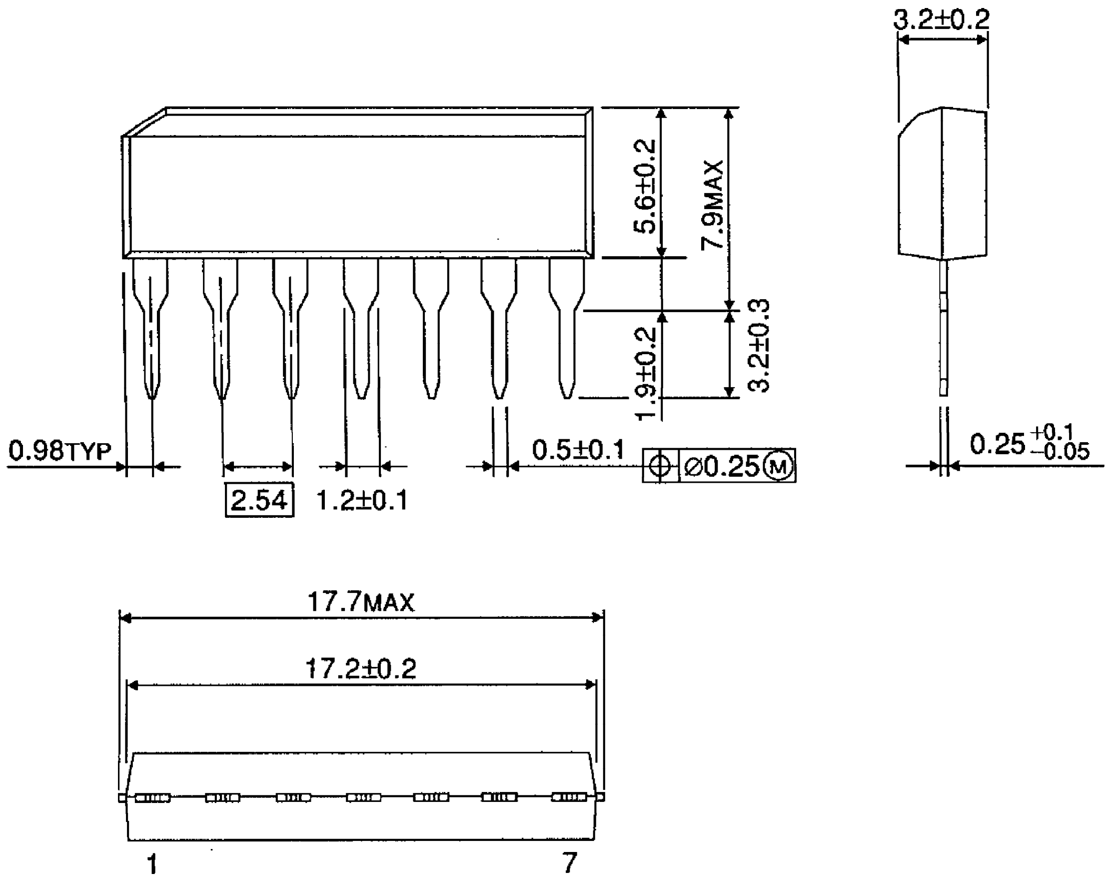


※ 500kHz ceramic resonator : Made by Matsushita Electronic Component Co. EFO-A500K

OUTLINE DRAWING

SIP7-P-A

Unit : mm



Weight : 0.72g (Typ.)